Meeting the Need for High Quality Teachers: e-Learning Solutions

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Educators, researchers, policymakers, and parents all agree that high quality teachers are the most important factor in a child's education. Rice (2003) reports that the relevant research shows the following:

- the single most important factor affecting student achievement is teachers, and the effects of teachers on student achievement are both additive and cumulative;
- an analysis of 400,000 students in 3,000 schools concluded that while school quality is an important determinant of student achievement, the most important predictor is teacher quality;
- the estimated difference between having a good teacher and having a bad teacher can exceed one grade-level equivalent in annual achievement growth;
- measures of teacher preparation and certification are by far the strongest correlates of student achievement in reading and mathematics, both before and after controlling for student poverty and language status;
- lower achieving students are the most likely to benefit from increases in teacher effectiveness.

Our nation's investment in teachers is enormous; there are more than 2.7 million full-time teachers employed in K-12 public and private schools (NCES, 2004), and the cost of teachers is the largest component – estimated at about 50% – of the more than $400 billion our country will spend each year on public K-12 education (NCES, 2003).

No Child Left Behind and HOUSSE Teacher Quality Requirements

In response to the critical need for a high quality teacher in every classroom, the No Child Left Behind legislation requires that all teachers of core academic subjects[ii] be highly qualified by the end of the 2005-2006 school year. The NCLB teacher quality requirements are written in broad terms, so that each state can develop its own specific teacher quality criteria and measures. Specifically, the NCLB definition of "highly qualified" requires that the teacher:

1. Has obtained full state certification or passed the state teacher licensing examination and holds a license to teach in the state;
2. Holds a minimum of a bachelor's degree;
3. Has demonstrated subject matter competency in each of the academic subjects he or she teaches.

The specific requirements differ for new and for experienced teachers, and for elementary, middle, and high school teachers. New elementary school teachers must demonstrate competency by passing a rigorous state test on subject knowledge and teaching skills in reading and language arts, writing, math, and other areas of the elementary curriculum. New middle and secondary school teachers need to demonstrate subject knowledge either by completing an academic degree or its equivalent or by passing a rigorous state test in the specific subject area or areas they teach. Experienced teachers can meet the same standards as new teachers or meet a High Objective Uniform State Standard of Evaluation (HOUSSE), which each state has the option

to develop. HOUSSE enables practicing teachers to demonstrate knowledge of their subject area without necessarily taking a test or participating in further formal study.

The Education Commission of the States (ECS) (www.ecs.org/clearinghouse/49/68/4968.doc) reports that HOUSSE systems developed by states use the following types of criteria:

- Point systems that provide teachers with credit for activities related to the subject taught, such as coursework, professional development, service on curriculum development committees, professional presentations, and publications.
- Professional development activities, often allowing teachers to develop plans that will enable them to meet the competency standard by 2006.
- Performance evaluations, including observations and reviews by peers, a panel, or a supervisor.
- Portfolio assessments that provide collections of evidence from the teacher's practice, such as lesson plans, student work, and classroom artifacts, that demonstrate competency in the subject taught.
- Student achievement data that measures the teacher's impact on their students' achievement.

ECS also provides summaries of the HOUSSE provisions developed by each state (www.ecs.org/ecsmain.asp?page=/html/educationissues/teachingquality/housse/houssedb_intro.asp).

The teacher quality standards drive a need for substantial professional development to ensure that current teachers have opportunities to meet the standards. In response, NCLB provides substantial funding to the states for professional development programs. Title I Part A supports professional development for teachers of disadvantaged students; Title I Part B, the Reading First and Early Reading First programs, provides funding to each state for programs that prepare teachers to implement effective reading instruction. Title II Part A provides nearly $3 billion a year for the Improving Teacher Quality State Grants program. Other parts of Title II support programs to enhance teacher subject-matter knowledge in mathematics and science; district efforts to recruit, train, and retain individuals from other careers to become teachers in high-need schools; and programs that prepare teachers to use technology to enhance education. Title III supports professional development programs for teachers of English language learners; Title V supports programs to increase the highly qualified teacher population in order to reduce class size. Other NCLB Titles and other federal programs, such as the Individuals with Disabilities Education Act (IDEA), provide additional funding for professional development.

Teacher Quality Challenges for States, Districts, Schools, and Teachers

While NCLB sets the teacher quality requirement and provides substantial funding, meeting these requirements presents major challenges for states, districts, and schools, as well as for individual teachers. These challenges include the following:

1. In many areas, there are large numbers of underqualified teachers who do not meet the state certification requirements but are teaching with emergency permits or credential waivers, since adequate numbers of credentialed teachers have not been available. For example, in 2002-2003, 7.2% of the K-12 teachers in California schools – more than 21,500 teachers – were teaching with emergency permits or credential waivers (CCTC, 2004, p. 2)
2. There is an inequitable distribution of underqualified teachers. For example, the 2003 California study *on The Status of the Teaching Profession* finds that students in the lowest-achieving schools, measured by the state's Academic Performance Index, are 4.5 times more likely to face under-prepared teachers than students in the highest-achieving schools (CFTL, 2003).
3. There is a high turnover rate of teachers, with about a third leaving the profession within their first three years of teaching and almost half leaving within their first five years. In low-income urban schools, the turnover rate is even higher than the national average (NCTAF, 2003).

4. There is a shortage of qualified teachers in particular subject areas, such as mathematics, the sciences, foreign languages, and special education (Darling-Hamond, 2000, p. 7).

5. Many pre-service teacher preparation programs are inadequately preparing graduates to meet the state teacher quality standards (ACE, 2004; US DoE, 2003).

6. There are specific issues at the middle school level, in which many current teachers have elementary credentials and lack adequate expertise in the subject area they teach.

7. Small rural schools often have teachers who teach multiple subjects and therefore must demonstrate subject matter expertise in each one. (Recent NCLB guidelines provide additional time for eligible teachers who meet high quality standards in one subject area to do so in other areas they also teach.

8. About 700,000 teachers are projected to retire over the next 10 years (NCTAF, 2003), and some districts have reported teachers deciding to retire earlier than they had previously planned rather than meet the new teacher quality requirements.

9. There is a shortage, in many places, of professional development opportunities that directly address what each teacher needs in order to reach the teacher quality standard. This is particularly true in rural areas, but teachers throughout the country may be challenged to find high-quality professional development that fits their specific needs and is available when and where they can participate (ACME, 2002).

Clearly, solutions to this myriad of challenges requires addressing the full range of systemic issues that underlie the problems of teacher recruitment, training, and retention. However, e-learning can contribute to addressing each challenge by enhancing the preparation of new teachers, providing high quality and readily accessible professional development opportunities for active teachers, and making the teaching profession more attractive (e.g., by providing online resources for teachers and new connections to colleagues and mentors) to help address the teacher recruitment and retention problems. This paper considers the potential of e-learning as a powerful new tool to help address the teacher quality challenges.

Principles of Effective Professional Development

In order to be effective, e-learning for teachers must reflect the principles of effective professional development. Research has led to agreement on a number of key principles of successful professional development practices for K-12 educators. In a summary of these principles, Sparks and Hirsh (1997) describe a "paradigm shift" in staff development, away from one-day in-service presentations to professional development as an integral, ongoing part of teachers' lives. Major research studies and syntheses by Shulman (1987), Stigler and Stevenson (1991), Darling-Hammond and McLaughlin (1995), Sparks and Hirsch (1997), Ball and Cohen (1999), National Foundation for the Improvement of Education (1996), National Staff Development Council (2001a), Borasi and Fonzi (2002), and others consistently agree that professional development is more effective when it:

- fosters a deepening of subject-matter knowledge, a greater understanding of learning, and a greater appreciation of students' needs;
- centers around the critical activities of teaching and learning—planning lessons, evaluating student work, developing curriculum, improving classroom practices and increasing student learning—rather than on abstractions and generalities;
- builds on investigations of practice through cases that involve specific problems of practice, questions, analysis, reflection, and substantial professional discourse;
- values and cultivates a culture of collegiality, involving knowledge and experience sharing among educators; and,
- is sustained, intensive, and continuously woven into the everyday fabric of the teaching profession, through modeling, coaching, and collaborations.

These principles are reflected in the NCLB legislation, which specifies that high quality professional development includes, but is not limited to, activities that:

- Improve and increase teachers' knowledge of academic subjects;
- Are integral to broad school-wide and district-wide educational improvement plans;
- Give teachers and principals the knowledge and skills to help students meet challenging state academic standards;
- Improve classroom management skills;
- Are sustained, intensive and classroom-focused; are not one-day or short-term workshops;
- Advance teacher understanding of effective instructional strategies that are supported by scientifically based research;
- Are developed with extensive participation of teachers, principals, parents and administrators (US DoE, 2004).

The Potential of e-Learning

While there is general agreement about the core principles that underlie successful professional development programs, these principles can be difficult to implement in actual practice because the required expertise, time, funding, and culture of collaboration may not be readily available at a school or district. In addition, the high quality standards drive a need for subject area and grade-level specific professional development, and the specific program a teacher needs may not be available locally, especially in rural areas and for teachers of specialized courses. This situation, combined with the widespread access to the Internet in K-12 schools, teachers' homes, libraries, and other community centers, has led to the increased use of e-learning as a vehicle for delivering professional development targeted to specific teachers' needs.

There are many forms of e-learning courses. The example programs described below primarily use an *online professional learning community* approach, in which a cohort of educators participates in a series of learning activities, exchanging ideas with others in the cohort as well as with the instructor. This approach generally uses readily available web-based technologies and asynchronous discussions, so teachers can participate on their own schedules from any location with Internet access. Courses using a learning community approach often include classroom or school-based activities in which teachers are asked to implement a sample lesson, prepare lesson plans, assess students' work, or visit other classrooms, and then discuss these activities online or incorporate their work into their projects.

Other e-learning programs *use video broadcast formats*, in which teachers view lectures, demonstration classes, and other materials online. This approach allows an instructor's presentation to be broadcast to multiple sites, and, depending upon the available technology, for interactions via video conferencing, audio conferencing, or online text messaging. The disadvantage of this approach is that it generally requires participants to go to a specific site in which the technology is available, so it involves scheduled sessions. However, as the technology and available bandwidth continues to advance, video conference-based approaches will become more widely accessible to teachers in their schools and homes.

Another common e-learning format *provides individualized, self-paced instruction*, in which each teacher proceeds through a series of online learning activities at his or her own pace. For some limited topics, this takes the form of self-study without any interactions, but more often this approach involves some interactions with an instructor through an online discussion board, email or, in some cases, telephone. While this approach provides the most flexibility, it lacks opportunity for interactions with colleagues.

Other approaches are emerging. For example, some e-learning programs are beginning to explore the use of voice-over-internet to enable participants to engage in spoken exchanges. There are also hybrid models that integrate onsite meetings, classroom visits, or local study groups into a primarily e-learning course.

In addition to providing full courses, e-learning can be used to enhance and extend face-to-face workshops and courses, coaching and mentoring programs, teacher

study groups, and other professional development approaches. In each case, the e-learning technology provides a convenient means of communicating and sharing information, one that doesn't depend on people being available at the same time or place. As an enhancement to other types of professional development programs, e-learning can enable participants to continue discussions from onsite meetings, provide access to experts and resources that are not available locally, enable rapid responses to questions, facilitate developing collections of shared resources, and, in general, deepen connections with colleagues and mentors.

Examples of e-Learning Programs for Educators

e-Learning for educators has rapidly come into widespread use in the past few years (Galley, 2002). According to the Association for Supervision and Curriculum Development, online courses are the fastest growing form of teacher training (Seal, 2003). A wide variety of innovative programs are available from states, districts, universities, colleges of education, regional service providers, and for-profit and non-profit companies. As examples, a few of the many innovative programs are briefly described below.

Louisiana State Department of Education (www.doe.state.la.us/lde/)

The Louisiana State Department of Education (LA-DoE) has been one of the early innovators in the use of e-learning in professional development. Some examples of e-learning in Louisiana statewide programs include the following:

1. *Bridging the Gap through Universal Design for Learning* (www.doe.state.la.us/lde/lcet/399.html) is a LA-DoE initiative for districts interested in addressing the challenges of the Individuals with Disabilities Education Act (IDEA) and learning how to make the general curriculum accessible for all learners. The program is designed for district or school teams comprised of special education teachers, regular education teachers, curriculum and special education supervisors, library media or technology specialists, and building or district administrators. It is offered in both face-to-face and in anytime, anywhere e-learning, with the same content presented in each. Since the program began in 2002, more than 200 K-12 educators and university faculty have completed the online course
2. LA-DoE also offers *Effective Instructional Technology* (www.doe.state.la.us/lde/lcet/1821.html) online courses to enable educators from across the state to meet national and state standards relative to technology. The first twelve-week online course helps teachers understand and apply the benefits of instructional technology in their classrooms. The second course guides the teacher through the process of creating a portfolio that demonstrates their progress toward enhancing education through technology. These courses enable teachers to complete activities that address all of the International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS) for students and teachers. These courses also count toward relicensure of a teaching certificate, earn university credit or Continuing Learning Units, and provide six of the nine hours needed to meet the requirements for certification in Educational Technology Facilitation. Since this program begin in Fall 2003, about 20 educational leaders have been trained as instructors in the program and more than 75 teachers have completed the first course.
3. The *Louisiana Teacher Assistance and Assessment Program* (LaTAAP) (www.doe.state.la.us/lde/pd/623.html) is a state-mandated induction program designed to support new teachers in meeting the performance standards required for certification. Each mentor is an experienced teacher who acts as a coach, models effective practices, and helps the novice teacher formulate a formal Professional Development Plan. With funding from NCLB Title IID grants, a number of Louisiana districts have added an e-learning component LaTAAP to create the FIRSTTech (Framework for Inducting, Retaining and Supporting Teachers with Technology) program. In these districts, the teachers and mentors are each given a laptop computer and access to an e-learning environment that provides both on-demand resources for the new teachers and a communication channel that extends the mentoring opportunities through electronic exchanges. Twenty-five of Louisiana's sixty-eight school districts have participated in the FIRSTTech program since its inception in 2002.

4. The *Louisiana Principal Induction Program* (LPI) (www.doe.state.la.us/lde/lcet/1642.html), mandated for new principals and assistant principals, is designed to build the capacity of new building-level administrators to provide leadership to their schools in both instructional and administrative areas. In addition to local, regional and state meetings, a major component of this two-year program consists of online modules based on the Standards for School Principals in Louisiana and other national leadership standards. These modules focus on teaching and learning, promoting school improvement, and enhancing student achievement. The online activities are facilitated by team mentors and LA-DoE staff, and incorporate statewide discussions with inductees. During the past three years, more than 1,280 building level administrators have completed the online component of the LPI program.
5. Experienced principals and district administrators are also provided with online learning opportunities through the state's *LEADTech* (Louisiana Educational Advancement and Development with Technology) program (www.louisianaschools.net/leadtech/). LEADTech, originally funded through the Gates Foundation, provides administrators with an eight-week, graduate credit, online course designed to build strong instructional leaders who effectively use technology. Since the program began in spring 2000, more than 1,200 educational leaders and policymakers have successfully completed the online course.

Florida Online Reading Professional Development Program (www.itrc.ucf.edu/forpd/about/)

The Florida Online Reading Professional Development program (FOR-PD) provides an online staff development course designed to serve as a primary delivery mechanism for improving teaching methods in preK-12 reading instruction. Developed by the University of Central Florida with funding from the Florida DoE, the goals of FOR-PD include the following:

- support the Florida Department of Education in its statewide implementation of a reading professional development system using online delivery;
- serve as a model for reading professional development online delivery;
- translate scientifically-based research into action;
- empower teachers to use innovative, creative, and effective strategies to help all children learn to read proficiently;
- increase the teachers' knowledge base about reading; and
- improve curriculum and reading instruction in order to improve student learning.

The FOR-PD 14-week online course is facilitated by reading specialists and other qualified educators who receive training to become certified to teach the course. Since FOR-PD was first offered in January 2003, more than 6700 Florida teachers have enrolled in the course. The course is offered for free to Florida teachers. By arrangement with Florida universities, teachers can obtain graduate credit, with a tuition fee required.

An outside interim report of the first year of the FOR-PD course found that:

- Over 90% of participants indicated that the value of reading strategies introduced in FOR-PD was excellent or good;
- Approximately 97% of participants indicated FOR-PD was excellent or good in covering the state and national reading initiatives;
- Over 90% of participants indicated that FOR-PD has contributed to their knowledge of effective reading theory, research, and instructional practice to an excellent or good extent; and
- Over 87% of FOR-PD participants indicated they would make changes to their classroom reading instruction as a result of FOR-PD.

Milwaukee Public School District (www.milwaukee.k12.wi.us/pages/MPS/Teachers_Staff/Tech_Tools/Portal)

The Milwaukee Public School District (MPS) has established a strategic initiative, the Professional Support Portal, designed to use technology to support teacher induction, retention, and continued professional growth at all stages of the teaching career continuum. The goal of the Portal project is to build social and technical infrastructures that will help address three

categories of teachers' needs: (1) access to classroom resources, lesson planning tools, and teaching and classroom management strategies; (2) opportunities to work with mentors and observe classrooms led by experienced teachers; and (3) ongoing social, emotional, and professional support from peers and experienced teachers. The Portal project has allowed for a convergence of several key technology initiatives already underway, and has supported the initiation of new e-learning opportunities for both teachers and principals. Some of these include:

- Guidance via videoconferencing from Harvard faculty for a cohort of MPS principals who completed the Harvard Principal's Institute in Cambridge, MA this past summer and now are receiving feedback and support as they implement leading-edge practices in local settings;
- The use of TappedIn®, a non-profit multi-user virtual environment for professional development developed by SRI International (www.ti2.org). By providing an online conference center that combines tools for exchanging resources and for asynchronous and synchronous communications, TappedIn® enables Milwaukee educators to build and sustain communities of practice;
- A series of online professional development workshops. With training and support from the EDC EdTech Leaders® Online program, MPS staff has developed capacity to design, implement, and sustain a robust district-wide online professional development program (www.milwaukee.k12.wi.us/pages/MPS/Teachers_Staff/Training/Continuing_Education/Technology). Through this program, MPS has offered more than 50 workshops, with more than 1300 participants. These six-week workshops, facilitated by MPS staff, have focused on the use of technology in different subject areas and grade-levels, and on the use of data-informed decision making for teachers and administrators. Through an arrangement with Cardinal Stritch University, a local Institution of Higher Education with close teacher preparation and professional development ties to the district, participants in these workshops can receive graduate credit.

Lesley University (www.lesley.edu/online_courses.html)
Lesley University (previously Lesley College), based in Cambridge Massachusetts, is the largest teacher certification program in Massachusetts and the largest graduate program for educators in the United States. In addition to traditional, on-campus programs, Lesley University offers Bachelor's and Master's degree programs in education designed to provide flexibility to meet the needs of students who have responsibilities that make it impossible for them to attend regular on-campus courses. These programs, which have a 20-year history at Lesley University, are currently provided at learning sites in 21 states. They use a weekend study format in which 45 hours of class time are provided in two intensive weekend sessions, with class assignments completed before, between, and after these sessions. Students in these degree programs are grouped into cohorts that progress through the course sequence together so that each cohort forms an ongoing learning community. Lesley University also provides online library resources and other supports to make the off-site weekend program experience as similar as possible to the experience of its on-campus students.

The Lesley University off-site model provided a natural basis for offering e-learning programs and Lesley University has, since 1997, offered an online Master's program in Technology in Education. Courses are spread over 12 weeks, rather than packed into two intensive weekends, with weekly sessions involving readings, assignments, and online, asynchronous discussions. Students can proceed through the program at their own pace but find that an online learning community develops within each course. Students receive feedback from faculty on their work, and faculty are available for online and phone exchanges outside of class. A recent survey found that students in the online program rated their experience to be very positive. They rated the frequent interactions with the instructors as most valuable, followed by the up-to-date and relevant content and the interactions with their fellow students.

Lesley University also offers a new online Master's degree in K-8 science education program, developed in collaboration with TERC (www.lesley.edu/soe/science/ts_indepth.html). Program participants build their understanding of core science concepts while engaging in

the same learning paradigm of inquiry-based science that they will bring to their classrooms. Approximately 50% of each course in this program is devoted to learning science content by doing science, 25% to considering issues of pedagogy, curriculum, and assessment, and 25% to trying ideas in the classroom and reflecting on these experiences with other program participants. Each module is taught by two instructors: a scientist well versed in the science domain and a science educator who supports participants as they consider pedagogical strategies for bringing science inquiry into their classrooms. Participants use threaded discussions, an electronic meeting place, images, videos, text, and current online data and information. Instructors track learners' progress through an online archive of participant portfolios. Research comparing this program to the Lesley University on-campus equivalent program showed better learning results for the online students in understanding the inquiry process and classroom use of inquiry methods. The research also showed that the online students and instructors both spent more time on the course that the on-campus group (Harlen & Altobello 2003).

Western Governors University Teachers College (www.wgu.edu/education/landing.asp)

WGU is a true virtual university: while its administrative officers are based in Salt Lake City, it has no campus and its faculty are distributed around the country. Founded by the governors of 19 western states as a non-profit university, WGU is the only accredited university in the U.S. offering competency-based, online degrees. The WGU Teachers College offers Bachelor's degree teacher preparation programs and post-baccalaureate licensure programs to prepare students for licensure as preK-8 teachers, or as middle school or high school mathematics, social studies, or science teachers. It also offers Master's degree programs in the same areas of specialization.

Each student is guided by a WGU mentor. Following a pre-assessment and interview, the student and mentor develop an individualized *academic action plan* that guides the student in selecting online courses, independent study modules, or other educational experiences to prepare for the competency-based assessments. The courses and other learning activities in the academic action plan are chosen from a wide variety of WGU-approved online courses available from colleges, universities, and other providers. That is, WGU does not have its own catalog of courses; the course options for its students are distributed among many course providers. WGU Teachers Colleges also arranges for students to do trial teaching and demonstration teaching (equivalent to student teaching) in a school district in the student's area, and arranges for a field supervisor to monitor and assess the student's classroom practice.

All WGU programs are competency-based, rather than course or credit based. The WGU Teachers College has developed a comprehensive set of competency standards for teachers that includes those found in many state and national standards. Based upon these standards, they developed a comprehensive assessment system to evaluate each student's subject area knowledge, conceptual foundations of teaching, and teaching practices. The assessments involve a combination of proctored examinations to assess knowledge, performance tasks to assess skills, and observations of classroom practices to assess teaching ability. A student who successfully completes all the required assessments is eligible for his or her degree, no matter how the student has acquired the knowledge and skills assessed. Therefore, students can take advantages of their existing competencies and advance through their program at their own rate

As part of their program, candidates enrolled in a WGU teacher preparation program plan and teach a four-week standards-based instructional unit that provides an opportunity to demonstrate that they can integrate all elements of teaching and positively influence student learning. They complete a *Teacher Work Sample* professional portfolio that provides direct evidence of the candidate's ability to design and implement a multi-week standards-based unit of instruction, assess student learning, affect student achievement and then reflect on the learning process.

The WGU programs are designed for highly motivated adults who want to become certified teachers, or for certified teachers who want to complete their Master's degree. Success in these programs requires an ability to work independently and a comfort with online communication. It does not replace a typical college experience, but provides a new, flexible option for many

adults who need to fit continuing education around work and family commitments.

The infrastructure of the WGU Teachers College has been designed to allow for rapid growth to a large number of students. As of June 2004, WGU Teachers College had approximately 1600 students enrolled in its degree programs. Students can start at the beginning of any month, and currently 200 to 300 students are being added each month.

Other e-Learning and Teacher Quality Programs

There are many additional program throughout the country involving e-learning and teacher quality. A few examples include:

The Southern Regional Education Board (SREB) Multi-State Online Professional Development Consortium (www.sreb.org/programs/EdTech/toolkit/onlineindex.asp)
The Southern Regional Education Board (SREB), working in collaboration with the 16 states in its region, the SouthEast Initiatives Regional Technology in Education Consortium (SEIRTEC), and EDC, has established the Multi-State Online Professional Development Consortium to promote and support efforts of states and schools to use online professional development. All 16 SREB states' departments of education are working together to use and promote the use of the Web to provide needed quality professional development for teachers regardless of where they live or work.

Virginia Regional Consortia
In Virginia, several regional consortia are building e-learning collaborations, with the support of Title IID funds, to share online professional development resources and workshops. The Blue Ridge West Consortium (www.scsb.org/etlo_workshops.htm), encompassing 19 school divisions, will offer approximately 75 online workshops for teachers during the next year in a wide range of subject areas and grade levels. A similar program is available through the Virginia North Tier Partnership (www.culpeperschools.org/ETLO), which will offer 50 online workshops to teachers across their 13 school district consortium. In both consortia, the workshops are a component of their teacher quality initiatives and college credit is available for participants.

Michigan LearnPort (http://www.learnport.org/)
The Michigan Department of Education and the Michigan Virtual University, with support from the legislature and governor, is creating the Michigan LearnPort, a statewide portal designed to help both teachers and education para-professionals meet the Michigan quality standards. LearnPort is designed to effectively disseminate information to all educators in the state, provide a repository of educational resources to which teachers can contribute, and provide a central resource for online professional development. LearnPort will offer all educators in Michigan free, five hours of online learning that will introduce them to e-learning and enable them to become better consumers of online education. It is also working with universities, colleges, and school districts within Michigan to develop a catalog of e-learning courses for teachers and para-professionals.

Los Angeles Unified School District (www.lausd.k12.ca.us/lausd/offices/opd/)
The Los Angeles Unified School District (LAUSD) has incorporated e-learning into its ongoing professional development and training programs. Since October 2000, more than 25 online professional development specialists have been trained to design and deliver online workshops that are aligned with district standards and address a range of subject areas and grade levels. Each of these workshops includes six weeks of online instruction and two face-to-face meetings. In the fall of 2003, LAUSD expanded use of online learning to students, and launched the Los Angeles Virtual Academy (LAVA).

PBS TeacherLine (www.pbs.org/teacherline)
Funded by the U.S. Department of Education, PBS TeacherLine has worked with a variety of content developers to create a catalog of online professional development courses for teachers, focusing on mathematics education, teaching reading, and effective uses of technology in the classroom. These courses are made available through local PBS affiliate stations and through other partnerships.

Lessons Learned about e-Learning for Educators

Most research studies on e-learning are based on higher education courses, with impact on learning

measured by tests and grades (Phillips and Merisotis, 1999). The most common result of this research is to find no significant differences between student learning in face-to-face and online courses, and to find that those who take online versions of courses are as satisfied with the experience as those who attended classes (Russell, 1999). However, in some studies, such as Koory's (2003) comparison of an Introduction to Shakespeare course delivered online and face-to-face, and Harlen & Altobello's (2003) comparison of an online and face-to-face science education course, the results showed better learning outcomes online.

Survey data from participants in many online professional development programs show that when online courses are well-designed and implemented, participants report them to be valuable and enjoyable learning experiences that impact both knowledge and professional practice. That is, the participant survey results from many programs are consistent with those from the Florida and Lesley University programs summarized above. Experimental comparisons of different models of e-learning and onsite professional development for educators are underway, but results are not yet available.

The available data, along with analyses of the e-learning programs on which they are based, lead to the conclusion that well-designed e-learning programs can have positive impact on educators' knowledge and practices, and the amount of impact is comparable to that in other professional development approaches. It appears that the quality of the course content and design, and the nature of the interactions with the instructor, are more important determinants of learning than whether the course is taught face-to-face, online, or some blend of both (Koory 2003). If this is verified by future research, e-learning will become an increasingly important tool to help meet teacher quality requirements, one that can provide professional development opportunities not otherwise available and that can also be used to enrich other forms of professional development by adding online resources and communications.

However, e-learning is not a magic solution, and many educators have already experienced poor quality e-learning offerings. Some of the lessons learned about providing effective e-learning for educators include the following:

- Successful e-learning programs need to be designed to incorporate principles of effective professional development and to take good advantage of the opportunities afforded by the technology, such as anytime, anyplace access to discussions, resources and experts.
- The e-learning format must match the goals of the course and the needs of the participants. For example, specific skills and knowledge can be learned by *online*, *self-paced courses*, but changing classroom practices generally requires an *online learning community approach* in which teachers view model practices (in person or via video), experience using them in the classroom, reflect upon their experience, and engage in discussions with peers and mentors.
- The nature of the online interactions between learners and instructors, and among the group of learners, is critical. Courses that are highly rated by participants generally involve many, content-rich interactions with the instructor and with other participants.
- Developing effective, multi-media, online learning experiences for educators is both challenging and expensive. It requires knowledge of the subject matter, adult learning theory, course design, multi-media technology development, and the specifics of online learning. Quick conversions of successful face-to-face courses and workshops to the online medium general result in poor quality e-learning.
- Teaching online is different from teaching face-to-face, and instructors who teach online should receive training in online communications and course facilitation.
- e-Learning has a different cost structure than onsite courses, is not necessarily less expensive. While there are savings in physical space and perhaps travel, there are costs for the technology infrastructure and course design. Many instructors find that teaching online takes more time than teaching a comparable class face-to-face, given the nature and amount of online exchanges that occur. Therefore, online instructors, in interactive formats, cannot handle more students than in a comparable onsite class.

- Participating teachers need support and incentives, just as they do for other types of professional development. Districts that view e-learning as a low-cost alternative because teachers can do it on their own time, allowing the district to avoid providing release time and pay for substitutes, generally find resistance from their teachers and the teachers' union.
- Ready access to reliable technology with the needed capabilities—and to technical support when needed—is essential for participants to have good experiences with e-learning. It is essential that the technology demands of the e-learning program do not exceed the technology available to participants at both school and home.
- There are a number of e-learning technology systems available, with Blackboard, WebCT, eCollege, Desire2Learn and ANGEL among those that are commonly used in programs for educators. While each system has some strengths and weaknesses compared to the others (and each keeps releasing new versions with additional features), the quality of course design and of online teaching is far more important than which e-learning platform is used.
- When possible, hybrid programs that blend e-learning with face-to-face meetings, study groups, coaching, and other activities result in the most effective professional development programs.
- e-Learning may not be for everyone. Some educators report that they are simply uncomfortable communicating online or unable to organize their time and work without face-to-face meetings.
- e-Learning provides teachers with a chance to experience for themselves new ways of learning, which can inform their decisions about the use of technology with students.
- e-Learning provides more opportunities for accountability and quality control than other forms of professional development. By its very nature, e-learning leaves a detailed record of content, assignments, products, and interactions that can be reviewed to insure quality. A discussion in an onsite classroom vanishes as it is produced; an online discussion in an e-learning course is preserved for as long as desired, and the contribution of each individual can be assessed. e-Learning systems thereby capture a great deal of information that can be used to assess participation and learning, as well as the quality of teaching.

Policy Issues

e-Learning also brings challenges to policymakers. These challenges can be summarized by the need for policies that support the development of e-learning resources and programs, remove barriers to e-learning, provide funding for innovation and research, and ensure high-quality e-learning programs for educators.

The NCLB teacher quality requirements place a strong emphasis on subject area content knowledge. Programs that provide online content in courses designed for teachers, such as the Lesley University K-8 science education program, have shown good initial success. But many more high-quality, content-rich, educator-oriented e-learning courses are needed to meet the professional development demands driven by NCLB. There are many potential providers of these courses: universities, colleges of education, state departments of education, school districts, regional service providers, online learning consortia, national grant-funded programs (such as PBS TeacherLine), education publishers, and other private sector organizations, will all be needed to help meet this demand in a timely way. Developing high quality online professional development programs is expensive, and support for this work is essential to the success of using e-learning to help address the teacher quality challenges on a national scale.

e-Learning providers are finding a number of policy barriers. For example, e-learning is very compatible with competency-based or knowledge-based assessments for teachers, but not with traditional measures such as number of contact hours. It is also not compatible with accreditation criteria that require buildings, physical libraries, and on-site faculty. e-Learning programs can easily cross state boundaries, but state certification systems don't always have a place for courses and programs offered from other states. Policies regulating incentives for teachers are also critical, as teachers engaged in e-learning professional development need to have access to the same stipends, credits, re-

lease time, salary increases, and other incentives as teachers engaged in more traditional forms. e-Learning for teachers also raises equity issues: Will all teachers have access to the needed technology to participate in this form of professional development?

We are just beginning to explore the potential of e-learning and learning to understand how to use it most effectively. In addition, as more advanced technologies become widely available to educators, the opportunities for e-learning and the need to explore potential uses of these technologies will increase. Some examples include real-time virtual visits to classrooms, use of video that can be annotated by course participants, voice-based online discussions, digital portfolios, and more sophisticated online collaborative work tools. Support is needed to develop innovative models of e-learning for educators and to conduct research to test the effectiveness of these models.

Quality control policies and procedures are critical for the widespread success of e-learning. For some, the reputation of e-learning has already been damaged by poor quality courses that have been marketed to educators. In some places, the response to experiences with poor quality e-learning has been to not accept e-learning as a valid form of professional development, rather than to put the needed quality assurance processes in place. In addition, since e-learning is new, most educators and policymakers are not yet prepared to be intelligent consumers of the many formats of e-learning, and this problem will increase as more sophisticated technologies are employed. In addition, many have underestimated the expertise, time, and costs involved in developing high quality e-learning courses and programs. While several groups have developed e-learning guidelines (e.g., ITRC 2000, NSDC 2000, NASBE 2001), these have not yet been incorporated into widely-used quality assurance policies and procedures.

Conclusions

The challenges of meeting the teacher quality requirements are huge, and the time to meet them is short. e-Learning can clearly provide a valuable means to help us meet these challenges, and the success of well-designed and well-implemented e-learning for educators has been demonstrated. e-Learning is ideal for increasing professional development opportunities for current teachers and for strengthening the preparation of future teachers. The anytime, anyplace nature of e-learning provides flexibility that can expand access to those in rural areas and to those whose schedules are filled with other responsibilities. In addition, e-learning can be blended with other professional development approaches to extend opportunities for educators to communicate and share resources. Much still needs to be done, however, before all educators will have sufficient access to high-quality e-learning courses that address the specific content and competencies they need to meet their state teacher quality standards. To meet this goal, policy makers need to support the development of e-learning resources and programs; remove barriers to e-learning; provide funding for innovation and research; and ensure high-quality e-learning programs for educators

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[ii] NCLB includes the following as core academic subjects: English, reading or language arts, math, science, history, civics and government, geography, economics, the arts, and foreign language. Special education teachers and teachers of English language learners must be highly qualified if they teach core academic subjects to their students.